

L Number	Hits	Search Text	DB	Time stamp
1	166622	polysaccharide starch cellulose fructan inulin	EPO; JPO; DERWENT	2003/02/21 07:35
2	245268	oxidati\$6 oxidiz\$6	EPO; JPO; DERWENT	2003/02/21 07:36
3	42761	aldehyd\$4 monoaldehyde	EPO; JPO; DERWENT	2003/02/21 07:36
4	219889	carboxyl\$6	EPO; JPO; DERWENT	2003/02/21 07:36
5	256656	(aldehyd\$4 monoaldehyde) carboxyl\$6	EPO; JPO; DERWENT	2003/02/21 07:37
6	465	(polysaccharide starch cellulose fructan inulin) and (oxidati\$6 oxidiz\$6) and ((aldehyd\$4 monoaldehyde) carboxyl\$6)	EPO; JPO; DERWENT	2003/02/21 07:37
7	41	(polysaccharide starch cellulose fructan inulin) and (oxidati\$6 oxidiz\$6) and (aldehyd\$4 monoaldehyde) and carboxyl\$6	EPO; JPO; DERWENT	2003/02/21 07:37

L Number	Hits	Search Text	DB	Time stamp
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6	465	(polysaccharide starch cellulose fructan inulin) and (oxidati\$6 oxidiz\$6) and ((aldehyd\$4 monoaldehyde) carboxyl\$6)	EPO; JPO; DERWENT	2003/02/21 07:37
7	41	(polysaccharide starch cellulose fructan inulin) and (oxidati\$6 oxidiz\$6) and (aldehyd\$4 monoaldehyde) and carboxyl\$6	EPO; JPO; DERWENT	2003/02/21 08:02
8	1984	((536/56) or (536/105) or (536/124)).CCLS.	USPAT	2003/02/21 08:52
9	400	fructan	USPAT; US-PGPUB	2003/02/21 08:52
10	2012	inulin	USPAT; US-PGPUB	2003/02/21 08:52
11	2152	fructan inulin	USPAT; US-PGPUB	2003/02/21 08:52
12	320290	oxidati\$6 oxidiz\$6	USPAT; US-PGPUB	2003/02/21 08:52
13	96	(fructan inulin) same (oxidati\$6 oxidiz\$6)	USPAT; US-PGPUB	2003/02/21 09:23
14	274184	carboxyl\$6 aldehyd\$4 monoaldehyde	USPAT; US-PGPUB	2003/02/21 09:24
15	96	((fructan inulin) (carboxyl\$6 aldehyd\$4 monoaldehyde)) and ((fructan inulin) same (oxidati\$6 oxidiz\$6))	USPAT; US-PGPUB	2003/02/21 09:24

FILE 'CAPLUS' ENTERED AT 10:48:54 ON 21 FEB 2003

L1 E KUZEE HENDRIKA/IN,AU
L2 15 S E5-7
L3 1172 S FRUCTAN
L4 9 S L1 AND L2
L5 E BESEMER ARIE/IN,AU
L6 46 S E3-10
L7 E JETTEN JAN/IN,AU
L8 12 S E4-8
L9 E VAN DOREN HENDRIK/IN,AU
L10 30 S E1-8
L11 2 S L4 AND L5 AND L6
L12 80 S L4 OR L5 OR L6
L13 179632 S CARBOHYDRATE
L14 74518 S POLYSACCHARIDE
L15 1172 S FRUCTAN
L16 768351 S OXIDATION
L17 353060 S OXIDIZ?
L18 244367 S L9 OR L10 OR L11
L19 769506 S L11 OR L12
L20 23 S L8 AND L14 AND L15
L21 21 S L16 NOT L7

L7 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2000:314401 CAPLUS
DOCUMENT NUMBER: 132:323226
TITLE: Carbohydrate oxidation products
INVENTOR(S): Besemer, Arie Cornelis; Jetten, Jan
Matthijs; Van Doren, Hendrik Arend; Van Der Lugt, Jan
Pieter
PATENT ASSIGNEE(S): Nederlandse Organisatie voor Toegepast-
Natuurwetenschappelijk Onderzoek TNO, Neth.
SOURCE: Eur. Pat. Appl., 7 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 999222	A1	20000510	EP 1998-203706	19981102
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
WO 2000026257	A1	20000511	WO 1999-NL673	19991102
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
EP 1137672	A1	20011004	EP 1999-971429	19991102
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002528605	T2	20020903	JP 2000-579643	19991102
PRIORITY APPLN. INFO.: EP 1998-203706 A 19981102 WO 1999-NL673 W 19991102				

AB A novel oxidn. product derived from a carbohydrate contg.
1,2-dihydroxyethylene groups in its repeating units, can be obtained by at
least partially oxidizing the carbohydrate 1,2-dihydroxyethylene groups to
dialdehyde groups, and oxidizing a part of the aldehyde groups to CO₂H
groups. The oxidn. product has a regular structure with alternating CHO
groups and CO₂H groups in a ratio of about 1:1. It can be further
transformed to an amino-substituted oxidn. product by reductive amination
of at least a part of the remaining CHO groups. Thus, starch was oxidized
with NaIO₄ and the resulting starch dialdehyde further oxidized with Br
(in situ generated from NaBr and AcOOH) to give starch comprising 0.7 CO₂H
and 1.2 CHO groups per monomeric unit.

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1999:723070 CAPLUS
DOCUMENT NUMBER: 131:337312
TITLE: Process for selective oxidation of primary alcohols
INVENTOR(S): Van Der Lugt, Jan Pieter; Jetten, Jan Matthijs
; Besemer, Arie Cornelis; Van Doren,
Hendrik Arend
PATENT ASSIGNEE(S): Nederlandse Organisatie voor Toegepast
Natuurwetenschappelijk Onderzoek TNO, Neth.
SOURCE: PCT Int. Appl., 11 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9957158	A1	19991111	WO 1999-NL272	19990504
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				

AU 9937369	A1	19991123	AU 1999-37369	19990504
AU 746462	B2	20020502		
BR 9910274	A	20010102	BR 1999-10274	19990504
EP 1093467	A1	20010425	EP 1999-919713	19990504
EP 1093467	B1	20020327		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI				
AT 215097	E	20020415	AT 1999-919713	19990504
JP 2002513809	T2	20020514	JP 2000-547126	19990504
ES 2174605	T3	20021101	ES 1999-919713	19990504
US 6518419	B1	20030211	US 2000-706767	20001107

PRIORITY APPLN. INFO.: EP 1998-201495 A 19980507
WO 1999-NL272 W 19990504

OTHER SOURCE(S): CASREACT 131:337312

AB Primary alcs., esp. in carbohydrates, can be selectively oxidized to aldehydes and carboxylic acids in a low-halogen process by using a peracid in the presence of a catalytic amt. of a di-tertiary-alkyl nitroxyl (TEMPO) and a catalytic amt. of halide. The halide is preferably bromide and the process can be carried out at nearly neutral to moderately alk. pH (5-11). The peracid can be produced or regenerated by means of hydrogen peroxide or oxygen. The process is advantageous for producing uronic acids and for introducing aldehyde groups which are suitable for crosslinking and derivatization.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 1 OF 21 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2003:76821 CAPLUS
DOCUMENT NUMBER: 138:124179
TITLE: Extraction of **polysaccharides** from vegetable
and microbial material using oxidizing agents
INVENTOR(S): Van Der Wilden, Wim; Haaksman, Ingrid Karin; Ekhart,
Peter Frank; **Jetten, Jan Matthijs**
PATENT ASSIGNEE(S): Nederlandse Organisatie Voor Toegepast-
Natuurwetenschappelijk Onderzoek Tno, Neth.
SOURCE: PCT Int. Appl., 15 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003008458	A1	20030130	WO 2002-NL482	20020717
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			

PRIORITY APPLN. INFO.: NL 2001-1018568 A 20010717

AB Useful **polysaccharides**, such as .beta.-1,3-glucans, from a biol. raw material can be solubilized and/or isolated by treating the raw material with an oxidizing agent that leads to oxidn. of primary hydroxyl groups in the glucan. The oxidizing agent is preferably a catalytic amt. of a nitroxyl compd. in the presence of a re-oxidizing agent such as hypochlorite or an oxidative enzyme with oxygen or hydrogen peroxide. The **polysaccharide** retains its useful properties during this treatment and is, moreover, more readily available. If desired, protein material from the raw material can also be utilized.

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 2 OF 21 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:811998 CAPLUS
DOCUMENT NUMBER: 137:312634
TITLE: Process for oxidizing primary hydroxyls in **carbohydrates**
INVENTOR(S): **Besemer, Arie**; Van Brussel-Verraest, Dorine
Lisa; Thiewes, Harm Jan
PATENT ASSIGNEE(S): SCA Hygiene Products Zeist B.V., Neth.
SOURCE: Eur. Pat. Appl., 6 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1251140	A1	20021023	EP 2001-201454	20010420
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR			

PRIORITY APPLN. INFO.: EP 2001-201454 20010420

AB **Carbohydrates** having primary hydroxyl groups, such as starch and cellulose, can be selectively oxidized to carboxylic **carbohydrates** by oxidn. with mol. oxygen, using a nitrogen oxide such as a nitrite salt, as a catalyst. The reaction is advantageously carried out in a dehydrating solvent such as concd. phosphoric acid. Thus, adding 500 .mu.L 65% nitric acid and 50 mg Na nitrite to a dissoln. of 2.5 g potato starch (15.4 mmol anhydroglucose units) in 50 mL of 85% H3PO4, exposing the resulting mixt. to O and oxidizing gave oxidized starch with degree of oxidn. (Blumenkrantz method) 40 and 50% after 24 and 96 h, resp.

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 3 OF 21 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:505677 CAPLUS
DOCUMENT NUMBER: 137:247354
TITLE: Selective **oxidation of carbohydrates**
by 4-AcNH-TEMPO/peracid systems

AUTHOR(S): Bragd, Petter L.; Besemer, Arie C.; Van
Bekkum, Herman
CORPORATE SOURCE: SCA Hygiene Products, Zeist, 3700 AJ, Neth.
SOURCE: Carbohydrate Polymers (2002), 49(4), 397-406
CODEN: CAPOD8; ISSN: 0144-8617
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Starch, amylopectin, inulin, pullulan and Me .alpha.-D-glucopyranoside (Me .alpha.-GlcP) were oxidized by 4-acetamido-2,2,6,6-tetramethylpiperidine-1-oxyl (4-AcNH-TEMPO) as the mediator and peracetic acid or monoperoxysulfate (Oxone) as the regenerating oxidant. The conversion of primary alc. groups to the corresponding carboxyl groups proceeded with high yield and selectivity, provided that NaBr was added as co-catalyst. The mass mol. distributions of the oxidized **polysaccharides** indicated that no major depolymn. occurred during oxidn. Oxone appeared to be the most efficient oxidant as the reaction rate was 25 times higher than that of peracetic acid in the oxidn. of Me .alpha.-GlcP. However, oxone produces a larger amt. of waste as byproduct than peracetic acid.
REFERENCE COUNT: 50 THERE ARE 50 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 4 OF 21 CAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2002:450359 CAPLUS
DOCUMENT NUMBER: 137:21693
TITLE: Process for oxidizing primary alcohols such as that of **polysaccharides**
INVENTOR(S): Bragd, Petter; Besemer, Arie Cornelis
PATENT ASSIGNEE(S): Swed.
SOURCE: U.S. Pat. Appl. Publ., 3 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002072600	A1	20020613	US 2001-13654	20011213
WO 2002048197	A1	20020620	WO 2001-NL903	20011212
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2002019718	A5	20020624	AU 2002-19718	20011212
PRIORITY APPLN. INFO.:				
			EP 2000-204483	A 20001213
			US 2000-255899P	P 20001218
			WO 2001-NL903	W 20011212

AB Primary hydroxyl groups in a substrate having both primary and secondary hydroxyl groups can be selectively oxidized to carbaldehyde and/or carboxyl groups by contacting the substrate with a cyclic nitroxyl compd. in the presence of a peroxosulfate as a co-oxidant and by carrying out the reaction at a temp. below 30.degree. and at a pH below 9. The process is halogen-free and metal-free and is esp. suitable for oxidizing **polysaccharides**. Thus, 3.0 g potato starch was gelatinized in 200 mL deionized water at 95.degree. with effective mech. stirring and to which 61 mg 4-acetamido-TEMPO was added and dissolved. The soln. was cooled on ice and the temp. was maintained at .ltoreq.10.degree. throughout the reaction. The reaction was initiated by the addn. of 11.38 g Oxone (i.e., 2 mol HSO5-/mol primary alc.), which was added under mech. stirring in small portions throughout the oxidn. to minimize unwanted side reactions. After each addn. of the acidic oxidant, pH was raised to 8.2 and then kept const. by the addn. of 0.5 M NaOH using a pH stat app. After completion of the reaction (8-10 h), the remaining aldehyde intermediates were reduced to the starting alc. using 150 mg of NaBH4. After one hour, pH was adjusted to .apprx.6.0 with 0.5 M HCl and the reacted **polysaccharides** were pptd. in 2 vol. of ethanol, filtered off, and re-dissolved in 50 mL of water. Finally the materials were freeze-dried. The conversion of the primary hydroxys to carboxys was estd. by 13CNMR to be 60 mol%.

L17 ANSWER 5 OF 21 CAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2001:781472 CAPLUS
DOCUMENT NUMBER: 135:332682

TITLE: Oxidation of polysaccharides with nitroxyls
 INVENTOR(S): Bragd, Petter; Besemer, Arie Cornelis; Thornton, Jeffrey Wilson
 PATENT ASSIGNEE(S): Neth.
 SOURCE: U.S. Pat. Appl. Publ., 3 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2001034442	A1	20011025	US 2001-841083	20010425
EP 1149846	A1	20011031	EP 2000-201461	20000425
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002003503	A2	20020109	JP 2001-125591	20010424
PRIORITY APPLN. INFO.:		EP 2000-201461 A 20000425		

AB A simplified process for oxidizing starch and other polysaccharides in an aq. soln. or suspension using hypochlorite in the presence of a catalytic amt. of a nitroxyl compd. (e.g., 2,2,6,6-tetramethylpiperidine-1-oxyl) is described. The oxidn. process is bromide-free and is carried out at a pH between 7 and 9.3 and at a temp. between 15 and 25.degree..

L17 ANSWER 6 OF 21 CAPLUS COPYRIGHT 2003 ACS
 ACCESSION NUMBER: 2001:360047 CAPLUS
 DOCUMENT NUMBER: 134:354734
 TITLE: Oxidized polysaccharides and products made thereof
 INVENTOR(S): Jaschinski, Thomas; Gunnars, Susanna; Besemer, Arie Cornelis; Bragd, Petter
 PATENT ASSIGNEE(S): SCA Hygiene Products G.m.b.H., Germany
 SOURCE: PCT Int. Appl., 51 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001034656	A1	20010517	WO 2000-EP11048	20001108
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
DE 19953589	A1	20010523	DE 1999-19953589	19991108
BR 2000015245	A	20020723	BR 2000-15245	20001108
EP 1228099	A1	20020807	EP 2000-972899	20001108
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, MC, IE, SI, LT, LV, FI, RO, MK, CY, AL				
PRIORITY APPLN. INFO.:		DE 1999-19953589 A 19991108 WO 2000-EP11048 W 20001108		

AB The present invention relates to a polysaccharide having functional groups, wherein said groups are aldehyde groups formed at positions C2 and/or C3 as well as at position C6 of the anhydroglucose units of the polysaccharide chain. Preferably, the polysaccharide is a cellulosic fibrous material, the primary and secondary hydroxyl groups of which are at least partially oxidized to aldehyde groups by means of TEMPO oxidn. and periodate oxidn. The invention also relates to a paper or nonwoven comprising the above polysaccharide. According to the invention a relative wet strength of greater than 10% can be achieved.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 7 OF 21 CAPLUS COPYRIGHT 2003 ACS
 ACCESSION NUMBER: 2001:330920 CAPLUS
 DOCUMENT NUMBER: 135:122663
 TITLE: TEMPO-derivatives as catalysts in the oxidation of primary alcohol groups in carbohydrates

AUTHOR(S): Bragd, Petter L.; Besemer, Arie C.; van
Bekkum, Herman
CORPORATE SOURCE: SCA Hygiene Products, Zeist, 3704 AJ, Neth.
SOURCE: Journal of Molecular Catalysis A: Chemical (2001),
170(1-2), 35-42
CODEN: JMCCF2; ISSN: 1381-1169
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 135:122663
AB Primary hydroxyl groups in aq. starch, pullulan and Me
.alpha.-D-glucopyranoside were oxidized to the corresponding carboxylic
acid functionalities by TEMPO-(4-X)-derivs. using sodium hypochlorite as
the primary oxidant. All the combinations of substrates and nitroxyl
radicals resulted in stoichiometric conversions, and the selectivity for
oxidn. of primary hydroxyls was high. Some depolymn. occurred
throughout the oxidn., esp. when 4-acetoxy and 4-mesyl-TEMPO
were used. The pH window of the activity of the inexpensive
4-acetamido-TEMPO was found to be substantially lower from that of the
other tested TEMPO-derivs.; thus allowing milder reaction conditions. At
pH 8, the rate of oxidn. was ca. two times higher when
4-acetamido-TEMPO was used compared to the other catalysts.
REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 8 OF 21 CAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2001:29875 CAPLUS
DOCUMENT NUMBER: 134:71837
TITLE: Process for regioselective oxidation of
primary alcohols of carbohydrates in
preparation of uronic acids
INVENTOR(S): Besemer, Arie Cornelis; Jaschinski, Thomas
PATENT ASSIGNEE(S): SCA Hygiene Products Zeist B.V., Neth.
SOURCE: PCT Int. Appl., 11 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001000681	A1	20010104	WO 2000-NL453	20000628
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG EP 1065218 A1 20010103 EP 1999-202126 19990630 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO DE 10084757 T 20020829 DE 2000-10084757 20000628 PRIORITY APPLN. INFO.: EP 1999-202126 A 19990630 WO 2000-NL453 W 20000628				

OTHER SOURCE(S): CASREACT 134:71837
AB The invention concerns a process for oxidizing a primary alc. such as a
carbohydrate using an oxidizing agent in the presence of a
catalytic amt. of a di-tertiary-alkyl nitroxyl, wherein the alc. is
oxidized using an oxidic compd. of a period 4 or 5 metal having an
oxidn. state of a least +3 as an oxidizing agent, for example
manganese dioxide.
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 9 OF 21 CAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2001:12577 CAPLUS
DOCUMENT NUMBER: 134:87953
TITLE: Bleach activator based on inulin
INVENTOR(S): Bolkenbaas, Mariette Ellen Boukje; Raaijmakers,
Henricus Wilhelmus Carolina; Kuze, Hendrika Cornelia;
Van Doren, Hendrik Arend; Haaksman, Ingrid
Karin
PATENT ASSIGNEE(S): Cooperatie Cosun U.A., Neth.
SOURCE: PCT Int. Appl., 14 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent

LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001000771	A1	20010104	WO 2000-NL462	20000630
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
NL 1012482	C2	20010103	NL 1999-1012482	19990630
EP 1190034	A1	20020327	EP 2000-944471	20000630
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO			
JP 2003503583	T2	20030128	JP 2001-506766	20000630
PRIORITY APPLN. INFO.:			NL 1999-1012482 A	19990630
			WO 2000-NL462 W	20000630

AB A partially acylated fructan, in particular a partially acylated inulin, having a degree of substitution with acyl groups of 0.4-2.5 and a degree of substitution of at most 0.2 with other substituents is used as a bleach activator. The soly. and efficiency of these derivs. is better than that of comparable products such as completely acylated derivs. and carboxylated derivs. The derivs. are prepd. by acylation in an aq. medium under controlled pH.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 10 OF 21 CAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2000:881088 CAPLUS
DOCUMENT NUMBER: 134:44078
TITLE: Process for regenerating periodic acid
INVENTOR(S): Besemer, Arie Cornelis; Jetten, Jan Mattijs
PATENT ASSIGNEE(S): Sca Hygiene Products Zeist B.V., Neth.
SOURCE: PCT Int. Appl., 10 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000075070	A1	20001214	WO 2000-NL386	20000607
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
BR 2000011371	A	20020226	BR 2000-11371	20000607
EP 1189834	A1	20020327	EP 2000-939190	20000607
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO			
JP 2003501334	T2	20030114	JP 2001-501556	20000607
PRIORITY APPLN. INFO.:			EP 1999-201808 A	19990607
			WO 2000-NL386 W	20000607

AB Periodic acid is regenerated and recovered from a spent iodate soln. by reaction with at least an equimolar amt. of a hypohalite in the presence of a water-miscible org. solvent, K⁺ or divalent cations (esp. Ca²⁺, Mg²⁺). The periodic acid is suitable for oxidn. of carbohydrates to dialdehyde carbohydrates, e.g., starch to dialdehyde starch, a wet strength additive for paper. Dialdehyde starch can be further oxidized to dicarboxy starch, a sequestering agent.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 11 OF 21 CAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2000:608928 CAPLUS
DOCUMENT NUMBER: 133:192110
TITLE: Process for selective oxidation of primary alcohols and novel carbohydrate aldehydes

INVENTOR(S): Jetten, Jan Matthijs; Van Den Dool, Ronald
 Tako Marinus; Van Hartingsveldt, Wim; Van Wandelen,
 Mario Tarcisius Ragmandus
 PATENT ASSIGNEE(S): Nederlandse Organisatie voor Toegepast-
 Natuurwetenschappelijk Onderzoek TNO, Neth.
 SOURCE: PCT Int. Appl., 13 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000050621	A2	20000831	WO 2000-NL117	20000224
W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
WO 2000050388	A1	20000831	WO 2000-NL118	20000224
W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
BR 2000008474	A	20020122	BR 2000-8474	20000224
BR 2000008478	A	20020122	BR 2000-8478	20000224
EP 1173409	A1	20020123	EP 2000-906769	20000224
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO			
EP 1177308	A2	20020206	EP 2000-906768	20000224
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO			
JP 2002537374	T2	20021105	JP 2000-600972	20000224
PRIORITY APPLN. INFO.:			EP 1999-200536 A	19990224
			WO 2000-NL117 W	20000224
			WO 2000-NL118 W	20000224

AB A process for producing aldehydes, and/or carboxylic acids is described, in which a primary alc., esp. a **carbohydrate**, is oxidized using a catalytic amt. of a nitrosonium compd. obtained by oxidizing a nitroxyl compd. in the presence of an enzyme compd. capable of **oxidn.** Further described are oxidized **carbohydrates** contg. at least 1 cyclic monosaccharide chain group carrying a carbaldehyde group per 25 monosaccharide units and per mol.

L17 ANSWER 12 OF 21 CAPLUS COPYRIGHT 2003 ACS
 ACCESSION NUMBER: 1999:736773 CAPLUS
 DOCUMENT NUMBER: 131:352732
 TITLE: Amino-carboxylic acid derivatives of **carbohydrates** as chelating agents
 INVENTOR(S): Van Brussel-Verraest, Dorine L.; Besemer, Arie C.; Thornton, Jeffrey W.
 PATENT ASSIGNEE(S): SCA Hygiene Products Nederland B.V., Neth.
 SOURCE: PCT Int. Appl., 17 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9958574	A1	19991118	WO 1999-NL300	19990517
W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG,			

CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
 AU 9941720 Al 19991129 AU 1999-41720 19990517
 PRIORITY APPLN. INFO.: EP 1998-201586 19980514
 WO 1999-NL300 19990517

AB The title derivs. are prepd., wherein .gtoreq.1 -CHOH or -CH2OH group per 10 monosaccharide units is converted to a group having the formula -CH2A[NH(CH2)nCHR1CO]mOH, wherein m = 1-10, n = 0-4, A = a direct bond or a (poly)aminoalkylene group, R1 = H, carboxyl, or C1-C4 alkyl optionally substituted by OH, MeO, SH, MeS, substituted mercapto or dithio, amino, guanidino, guanyl, ureido, carboxyl, carbamoyl, Ph, substituted Ph or a heterocyclic group, or, if n .noteq. 0, R1 may also be an amino. Other both carboxylated and aminated **carbohydrates** are equiv. to the derivs. defined above. These derivs. are useful for binding transition metals, e.g. before bleaching of pulp. Thus, a chelating agent was prepd. from oxidized starch, aspartic acid, and Na cyanoborohydride.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 13 OF 21 CAPLUS COPYRIGHT 2003 ACS
 ACCESSION NUMBER: 1999:375255 CAPLUS
 DOCUMENT NUMBER: 131:23575
 TITLE: Superabsorbent material made from oxidized **polysaccharides**
 INVENTOR(S): **Besemer, Arie Cornelis**; Thornton, Jeffrey Wilson
 PATENT ASSIGNEE(S): SCA Molnlycke, Neth.
 SOURCE: Eur. Pat. Appl., 7 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 920874	Al	19990609	EP 1997-203823	19971205
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
WO 9929352	Al	19990617	WO 1998-NL693	19981207
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 9915122	Al	19990628	AU 1999-15122	19981207
PRIORITY APPLN. INFO.: EP 1997-203823 19971205				
WO 1998-NL693 19981207				

AB The invention provides a process of producing a superabsorbent **polysaccharide** deriv. by oxidn. of a .alpha.-glucan, glucomannan or galactomannan to introduce aldehyde functions; the oxidized **polysaccharide** subsequently being reacted with sulfur dioxide or an equiv. thereof to produce a hydroxysulfonated **polysaccharide**. The **polysaccharide** may be crosslinked before or after the oxidn. The preferred **polysaccharide** is starch or guar. Thus, 10 g starch was suspended in 14% sodium sulfate soln. and was crosslinked with 0.1% epichlorohydrin. After 20 h the product was isolated and washed, then treated with 96% ethanol and acetone and dried in vacuum oven. The dried material was suspended in 250 mL water and 6.6 g sodium periodate was added and the mixt. was stirred for 20 h to obtain an oxidized product with a 50% degree of oxidn. The product was collected by filtration washed, dried, and freeze-dried. To a suspension of 1 g of the dry material in 20 mL of water, 1.6 mL of 39% sodium bisulfite soln. was added to obtain a gel which was pptd. in 96% ethanol and then collected and dried. The product had a free swelling capacity of 1.0 g/g.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 14 OF 21 CAPLUS COPYRIGHT 2003 ACS
 ACCESSION NUMBER: 1999:222866 CAPLUS
 DOCUMENT NUMBER: 130:224921
 TITLE: Cleaning of water filters with calcium-binding agents and catalytic oxidation in the presence of a di-tert-nitroxyl compound
 INVENTOR(S): **Besemer, Arie Cornelis**; Jetten, Jan Matthijs; Broens, Lute

PATENT ASSIGNEE(S): Norit Membraan Technologie B.V., Neth.
 SOURCE: PCT Int. Appl., 17 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9915256	A1	19990401	WO 1998-NL544	19980921
W:	AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
NL 1007086	C2	19990322	NL 1997-1007086	19970919
AU 9891901	A1	19990412	AU 1998-91901	19980921
PRIORITY APPLN. INFO.:			NL 1997-1007086	19970919
			WO 1998-NL544	19980921

AB Filters for water purifn. can be cleaned by treatment with a calcium-binding agent, preferably followed by catalytic oxidn., for example with hypochlorite in the presence of 2,2,6,6-tetramethylpiperidine-N-oxyl or a similar nitroxyl. Another oxidn. system is with H2O2 in the presence of a transition metal complex with a cyclic polyamine. The calcium-binding agent can be a dicarboxypolysaccharide, a phosphate, or a polyacetylamine (e.g., EDTA or NTA). In particular, dicarboxylinulin, optionally in combination with a zeolite, can be used as calcium-binding agent.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 15 OF 21 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1998:26714 CAPLUS
 DOCUMENT NUMBER: 128:115171
 TITLE: Autocatalytic oxidation of primary hydroxyl functions in glucans with nitrogen oxides
 AUTHOR(S): de Nooy, Arjan E. J.; Pagliaro, Mario; van Bekkum, Herman; Besemer, Arie C.
 CORPORATE SOURCE: Department of Biochemistry, TNO Nutrition and Food Research Institute, Zeist, 3700 AJ, Neth.
 SOURCE: Carbohydrate Research (1997), 304(2), 117-123
 CODEN: CRBRAT; ISSN: 0008-6215
 PUBLISHER: Elsevier Science Ltd.
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB The selective oxidn. of the primary hydroxyl groups in the glucans cellulose, amylose and pullulan with nitrogen oxides has been studied. The polymers were dissolved in 85% phosphoric acid and sodium nitrate was used as the stoichiometric oxidant. A catalytic amt. of sodium nitrite was added to reduce the induction time. With this reaction system, where the oxidizing nitrogen oxides are formed in situ, the primary hydroxyl groups could be completely oxidized (> 95%) to carboxylic acids. Undesired ketones due to secondary hydroxyl group oxidn. were subsequently reduced with sodium borohydride. Esp. for the .alpha.-glucans, this oxidn.-redn. sequence of secondary hydroxyl functions apparently gave epimerization. Degradn. of the polymers was slow provided the oxidn. was performed at 4 .degree.C. Thus, pullulan with <Mw> .apprxeq. 170 kg/mol yielded a polyuronate with <Mw> .apprxeq. 100 kg/mol. A study of this reaction system with .beta.-cyclodextrin as the substrate clearly showed that the reaction was autocatalytic.

L17 ANSWER 16 OF 21 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1997:85181 CAPLUS
 DOCUMENT NUMBER: 126:91000
 TITLE: Manufacture of oxidized polymeric carbohydrate ethers as sequestering agents
 INVENTOR(S): Heeres, Andre; Bleeker, Ido Pieter; Gotlieb, Kornelis Fester; Van Doren, Hendrick Arend
 PATENT ASSIGNEE(S): Coöperatieve Verkoop- en Productievereniging van Aardappelmeel en derivaten Avebe B. A., Neth.; Heeres, Andre; Bleeker, Ido Pieter; Gotlieb, Kornelis Fester; Van Doren, Hendrick Arend
 SOURCE: PCT Int. Appl., 51 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent

LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9638484	A1	19961205	WO 1996-NL218	19960603
W:	AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG			
RW:	KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA			
NL 1000495	C2	19961203	NL 1995-1000495	19950602
AU 9659125	A1	19961218	AU 1996-59125	19960603
PRIORITY APPLN. INFO.:			NL 1995-1000495	19950602
			WO 1996-NL218	19960603

AB The title ethers or their mixts. with a d.p. of .gtoreq.10 possess an excellent sequestering and anticrustation activity and are used as biodegradable (no data) additives in cleaning agents. The ethers are manufd. by selective oxidn. of at least a part of the primary OH groups of polymeric carbohydrate ethers with d.p. .gtoreq.10. The oxidn., e.g., of carboxymethyl or hydroxyethyl starch, CMC, etc., is carried out with NaOCl utilizing a catalytic amt. of stable nitroxide radicals, specifically 2,2,6,6,-tetramethylpiperidine-N-oxyl, and optionally, NaBr.

L17 ANSWER 17 OF 21 CAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1995:820596 CAPLUS
DOCUMENT NUMBER: 123:202726
TITLE: Method for oxidizing carbohydrates
INVENTOR(S): Besemer, Arie Cornelis; de Nooy, Arjan Erik Johan
PATENT ASSIGNEE(S): Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek-, Neth.
SOURCE: PCT Int. Appl., 20 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9507303	A1	19950316	WO 1994-NL217	19940907
W:	JP, US			
RW:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE			
NL 9301549	A	19950403	NL 1993-1549	19930907
PRIORITY APPLN. INFO.:			NL 1993-1549	19930907
OTHER SOURCE(S):	MARPAT 123:202726			

AB Carbohydrates having a primary OH group, e.g., starch (I), inulin, and fractions and derivs. thereof, are oxidized by hypohalite in the presence of a catalytic amt. of di-tert-alkyl nitroxyl, esp. 2,2,6,6-tetramethylpiperidin-1-oxyl (II), in an aq. medium at pH 9-13. The catalytic amt. of nitroxyl is preferably 0.1-2.5 wt.% (based on the carbohydrate). The oxidn. affords products having a high content (>90%) of carboxyl groups, without significant chain breakdown. Thus, a 4% soln. of NaOCl was adjusted to pH 10.8 with HCl, cooled to 0.degree., and added all at once to an aq. soln. contg. water-sol. potato I, II (1 wt.% based on I), and NaBr at 0.degree.. The percentage uronic acid formed was a measure of the selectivity of the reaction, and anal. showed a 96% yield.

L17 ANSWER 18 OF 21 CAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1995:468959 CAPLUS
DOCUMENT NUMBER: 123:33535
TITLE: Highly selective nitrosyl radical-mediated oxidation of primary alcohol groups in water-soluble glucans
AUTHOR(S): de Nooy, Arjan E. J.; Besemer, Arie C.; van Bakkum, Herman
CORPORATE SOURCE: TNO Nutrition and Food Research Institute, Department of Biochemistry, Utrechtseweg 48, AJ Zeist, 3700, Neth.
SOURCE: Carbohydrate Research (1995), 269(1), 89-98
CODEN: CRBRAT; ISSN: 0008-6215
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 123:33535

AB With catalytic amts. of 2,2,6,6-tetramethyl-1-piperidinyloxy (TEMPO) and hypochlorite/bromide as the regenerating oxidant in water, primary alc. groups in glucans and derivs. thereof were rapidly and completely oxidized. For pyranosides, selectivity was higher than 95% and no side products could be detected with ¹H and ¹³C NMR or with high-performance anion-exchange chromatog. (HPAEC). The optimum pH for the reaction was between 10 and 11. The oxidn. was found to be first order in TEMPO and Br⁻. The oxidn. method can be applied to det. the amt. of primary alc. groups in water-sol. glucans; for pullulan, a proportion of 70% and for dextran, a proportion of 3% primary alc. groups was found.

L17 ANSWER 19 OF 21 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1994:220725 CAPLUS
DOCUMENT NUMBER: 120:220725
TITLE: The catalytic effect of bromide in the hypochlorite oxidation of linear dextrans and inulin
AUTHOR(S): Besemer, Arie C.; van Bekkum, Herman
CORPORATE SOURCE: TNO-Nutr., Zeist, 3700 AJ, Neth.
SOURCE: Starch/Staerke (1994), 46(3), 101-6
CODEN: STARD; ISSN: 0038-9056
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The effect of bromide in the hypochlorite oxidn. of amyloextrins (short chain amylose) and inulin on the reaction rate was investigated. Both in the linear dextrans and inulin oxidn., the rate increased linearly with the NaBr concn., which proved its catalytic effect. The origin of the catalysis is the rapid Br¹⁻/OC¹¹⁻ conversion. The 2nd-order rate const. of the reaction carbohydrate + HOBr/OBr¹⁻ .fwdarw. polycarboxylates + HBr/Br¹⁻ was detd. at pH 9.0 and 294-298 K. The activation energy for the oxidn. of amyloextrins amts. to 67 kJ.mole⁻¹. The highest rate was detd. at pH 8.25. The reaction rate was almost independent of pH in the region 8.5-9.5. Because of the simultaneous occurrence of Br, Br³¹⁻, hypobromous acid, and hypobromite in the pH region investigated, it was difficult to elucidate the oxidn. mechanism.

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ACCESSION NUMBER: 1991:473980 CAPLUS
DOCUMENT NUMBER: 115:73980
TITLE: Preparation of polydicarboxysaccharides by oxidation of polysaccharides and their use as detergent builders
INVENTOR(S): Besemer, Arie Cornelis
PATENT ASSIGNEE(S): Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek (TNO), Neth.
SOURCE: Eur. Pat. Appl., 11 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 427349	A2	19910515	EP 1990-202964	19901108
EP 427349	A3	19911113		
EP 427349	B1	19950712		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
NL 8902786	A	19910603	NL 1989-2786	19891110
NL 9001027	A	19911118	NL 1990-1027	19900427
ES 2074528	T3	19950916	ES 1990-202964	19901108
CA 2029542	AA	19910511	CA 1990-2029542	19901109
CA 2029542	C	20010424		
JP 04175301	A2	19920623	JP 1990-302847	19901109
JP 3172171	B2	20010604		
WO 9117189	A1	19911114	WO 1991-NL68	19910426
W: AT, AU, BB, BG, BR, CA, CH, DE, DK, ES, FI, GB, HU, JP, KP, KR, LK, LU, MC, MG, MW, NL, NO, PL, RO, SD, SE, SU, US				
RW: AT, BE, BF, BJ, CF, CG, CH, CM, DE, DK, ES, FR, GA, GB, GR, IT, LU, ML, MR, NL, SE, SN, TD, TG				
AU 9176960	A1	19911127	AU 1991-76960	19910426
AU 649038	B2	19940512		
EP 526494	A1	19930210	EP 1991-907826	19910426
EP 526494	B1	19981209		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
JP 05506685	T2	19930930	JP 1991-507729	19910426
JP 3004052	B2	20000131		
AT 174346	E	19981215	AT 1991-907826	19910426
ES 2126570	T3	19990401	ES 1991-907826	19910426

CA 2081483	C	19990413	CA 1991-2081483	19910426
NO 9204134	A	19921027	NO 1992-4134	19921026
US 5326864	A	19940705	US 1992-949498	19921207

PRIORITY APPLN. INFO.:

NL 1989-2786	A	19891110
NL 1990-1027	A	19900427
WO 1991-NL68	A	19910426

AB Polydicarboxysaccharides are prepd. by oxidizing polysaccharides in the presence of hypobromite and/or hypoiodite in low concn. The method gives high yields of dicarboxy product during short reaction times. The product has high Ca- and Mg-binding capacities and a white color and is useful as a phosphate substitute in detergent compns. Thus, a soln. of 7.1 g amylosedextrin in 150 mL water was treated with 0.3 g NaBr at pH 7.5-9 with 55 mL NaOCl soln. (contg. 0.10 g active Cl/mL; added at 2 mL/5 min) to prep. a dicarboxy amylosedextrin.

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ACCESSION NUMBER: 1991:452175 CAPLUS
 DOCUMENT NUMBER: 115:52175
 TITLE: Polyglucuronic acids and their preparation and use
 INVENTOR(S): Kerkenaar, Antonius; Besemer, Arie Cornelis
 PATENT ASSIGNEE(S): Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek (TNO), Neth.
 SOURCE: PCT Int. Appl., 15 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9104988	A1	19910418	WO 1990-NL142	19900928
W: JP, US				
RW: AT, BE, CH, DE, DK, ES, FR, GB, IT, LU, NL, SE				
NL 8902428	A	19910416	NL 1989-2428	19890929

PRIORITY APPLN. INFO.:

NL 1989-2428	19890929
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AB Glucose-based polysaccharides such as starch and derivs. are selectively oxidized (esp. in an electrochem. cell) in the presence of complexing substances (e.g., C4-20 alkanolic acids and C3-C19 alkanesulfonic acids) to prep. polyglucuronic acids which have a high content of glucuronic acid units and are useful as complexing agents, carriers, stabilizers, soly. improvers, etc. Thus, 160 mg .beta.-cyclodextrin was oxidized in an electrochem. cell in the presence of 100 mg lauric acid to give a polyglucuronic acid.

	Type	Hits	Search Text
1	BRS	250244	polysaccharide starch cellulose fructan
2	BRS	318771	oxidiz\$4 oxidati\$6
3	BRS	9274	(polysaccharide starch cellulose fructan) same (oxidiz\$4 oxidati\$6)
4	BRS	85970	monoaldehyde aldehyd\$4
5	BRS	243622	monocarboxyl\$4 carboxyl\$4
6	BRS	1417	(polysaccharide starch cellulose fructan) and (oxidiz\$4 oxidati\$6) and ((polysaccharide starch cellulose fructan) same (oxidiz\$4 oxidati\$6)) and (monoaldehyde aldehyd\$4) and (monocarboxyl\$4 carboxyl\$4)
7	BRS	41435	536/\$6.ccls.
8	BRS	200	((polysaccharide starch cellulose fructan) and (oxidiz\$4 oxidati\$6) and ((polysaccharide starch cellulose fructan) same (oxidiz\$4 oxidati\$6)) and (monoaldehyde aldehyd\$4) and (monocarboxyl\$4 carboxyl\$4)) and 536/\$6.ccls.

	DBs
1	USPAT; US-PGPUB
2	USPAT; US-PGPUB
3	USPAT; US-PGPUB
4	USPAT; US-PGPUB
5	USPAT; US-PGPUB
6	USPAT; US-PGPUB
7	USPAT; US-PGPUB
8	USPAT; US-PGPUB